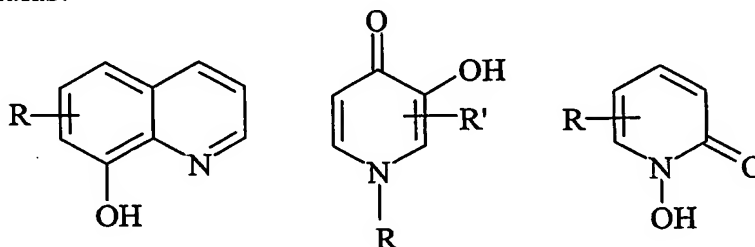


CLAIMS:

1. A compound comprising an iron chelator function and a residue selected from the group consisting of a residue that imparts a neuroprotective function to the compound, a residue that imparts combined antiapoptotic and neuroprotective function to the compound, or both.
2. A compound according to claim 1 wherein said residue imparting combined antiapoptotic and neuroprotective functions is a propargyl group.
3. A compound according to claim 1 wherein the iron chelator function is provided by a residue selected from the group consisting of a 8-hydroxyquinoline residue, a hydroxamate residue, and a pyridinone residue.
4. A compound according to claim 3 wherein the iron chelator function is a residue of 8-hydroxy-5-quinoline, a 3-hydroxypyridin-4-one or 1-hydroxypyridin-2-one of the formulas:

15



wherein R represents the group carrying the neuroprotective function and/or combined neuroprotective and antiapoptotic functions that may be linked at position 5, 6 or 7 of the quinoline ring, at position 1, 2, 5 or 6 of the 3-hydroxy-4-pyridinone wherein R' is C1-C4 lower alkyl, preferably, methyl, and at position 4 or 5 of the 1-hydroxy-2-pyridinone ring.

5. A compound according to claim 4 wherein the iron chelating function is provided by the 8-hydroxy-5-quinolinylmethylene group.

6. A compound according to claim 4 wherein the iron chelating function is provided by a 2-methyl-3-hydroxy-4-pyridinone group.
7. A compound according to any one of claims 1 to 6 wherein the residue imparting a neuroprotective function to the compound is selected from the group consisting of a neuroprotective peptide, a neuroprotective analog and a neuroprotective fragment thereof.
8. A compound according to claim 7 wherein said neuroprotective peptide is vasoactive intestinal peptide (VIP), gonadotropin-releasing hormone (GnRH), Substance P or enkephalin.
9. A compound according to claim 8 wherein said neuroprotective peptide is an analog of VIP, GnRH, Substance P or enkephalin or fragment thereof in which one amino acid residue is replaced by a L- or D-cysteine residue.
10. A compound according to claim 9 wherein said analog is selected from the group consisting of the VIP fragment analogs of SEQ ID NO:2 that may bear a stearyl or a Fmoc group at the amino terminal, the GnRH analogs of SEQ ID NO:4 and SEQ ID NO:5, the Substance P analogs of SEQ ID NO:7 and SEQ ID NO:8, and the enkephalin analogs of SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, and SEQ ID NO:14.
11. A compound according to claim 1 wherein the residue imparting a neuroprotective function to the compound is a L- or D-cysteine or L or D-alanine residue.
12. A compound according to claim 1 comprising a 8-hydroxy-5-quinolinyl iron-chelating function and a residue of a neuroprotective peptide, a neuroprotective analog or a neuroprotective fragment thereof as the neuroprotective function.

13. A compound according to claim 12 wherein said neuroprotective peptide is vasoactive intestinal peptide (VIP), gonadotropin-releasing hormone (GnRH), Substance P or enkephalin.

14. A compound according to claim 13 wherein said neuroprotective peptide is
5 an analog of VIP, GnRH, Substance P or enkephalin or a fragment thereof in which one amino acid residue is replaced by a L- or D-cysteine residue.

15. A compound according to claim 14 wherein said analog is selected from the group consisting of the VIP fragment analogs of SEQ ID NO:2 that may bear a stearyl or a Fmoc group at the amino terminal, the GnRH analogs of SEQ ID NO:4
10 and SEQ ID NO:5, the Substance P analogs of SEQ ID NO:7 and SEQ ID NO:8, and the enkephalin analogs of SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, and SEQ ID NO:14.

16. A compound according to any one of claims 12 to 15 further comprising a propargyl group.

15 17. A compound according to claim 1 comprising a 8-hydroxy-5-quinolinyl iron-chelating function and a residue of L- or D-cysteine or L- or D-alanine.

18. A compound according to claim 17 further comprising a propargyl group.

19. A compound according to claim 1 comprising a 8-hydroxy-5-quinolinyl iron-chelating function and a propargyl group.

20 20. A compound according to claim 19 wherein said 8-hydroxy-5-quinolinyl is the 8-hydroxy-5-quinolinylmethylene radical that is linked to the propargyl group via -N- atom(s).

21. A compound according to claim 20 wherein said 8-hydroxy-5-quinolinylmethylene radical is linked to the propargyl group via a linker selected
25 from ethylenediamine, piperazine and 1,3,5-perhydrotriazine residue.

22. A compound according to claim 21 wherein said 8-hydroxy-5-quinolinylmethylene radical is linked to the propargyl group via a piperazine residue.
23. A compound according to claim 20 wherein said 8-hydroxy-5-quinolinylmethylene radical is linked to the propargyl group via the -NH- group of a L- or D-alanine or L- or D-cysteine residue or an ester thereof.
24. A compound according to claim 1 comprising a hydroxamate iron-chelating function and a residue of a neuroprotective peptide, a neuroprotective analog or a neuroprotective fragment thereof as the neuroprotective function.
25. A compound according to claim 24 wherein said neuroprotective peptide is vasoactive intestinal peptide (VIP), gonadotropin-releasing hormone (GnRH), Substance P or enkephalin.
26. A compound according to claim 25 wherein said neuroprotective peptide is an analog of VIP, GnRH, Substance P or enkephalin or a fragment thereof in which one amino acid residue is replaced by a L- or D-cysteine residue.
27. A compound according to claim 26 wherein said analog is selected from the group consisting of the VIP fragment analogs of SEQ ID NO:2 that may bear a stearyl or a Fmoc group at the amino terminal, the GnRH analogs of SEQ ID NO:4 and SEQ ID NO:5, the Substance P analogs of SEQ ID NO:7 and SEQ ID NO:8, and the enkephalin analogs of SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, and SEQ ID NO:14.
28. A compound according to any one of claims 24 to 27 further comprising a propargyl group.
29. A compound according to claim 1 comprising a N-ethylene-2-hydroxy-3-methyl-pyridin-4-one iron-chelating function, and a residue of a neuroprotective

peptide, a neuroprotective analog or a neuroprotective fragment thereof as the neuroprotective function.

30. A compound according to claim 29 wherein said neuroprotective peptide is vasoactive intestinal peptide (VIP), gonadotropin-releasing hormone (GnRH),
5 Substance P or enkephalin.

31. A compound according to claim 30 wherein said neuroprotective peptide is an analog of VIP, GnRH, Substance P or enkephalin or a fragment thereof in which one amino acid residue is replaced by a L- or D-cysteine residue.

10 32. A compound according to claim 31 wherein said analog is selected from the group consisting of the VIP fragment analogs of SEQ ID NO:2 that may bear a stearyl or a Fmoc group at the amino terminal, the GnRH analogs of SEQ ID NO:4 and SEQ ID NO:5, the Substance P analogs of SEQ ID NO:7 and SEQ ID NO:8, and the enkephalin analogs of SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, and SEQ ID NO:14.

15 33. A compound according to any one of claims 29 to 32 further comprising a propargyl group.

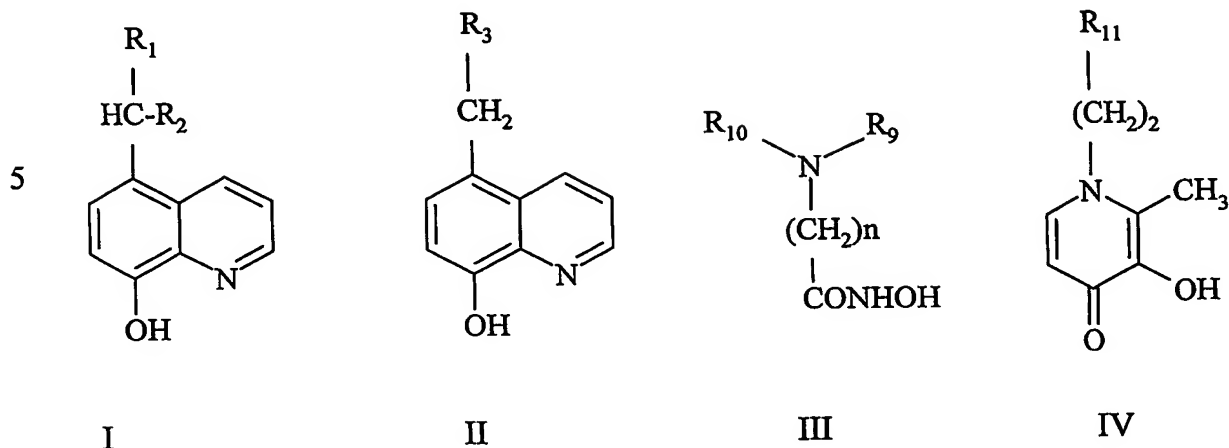
34. A compound according to claim 1 comprising a N-ethylene-2-hydroxy-3-methyl-pyridin-4-one iron-chelating function, a residue of L- or D-cysteine or L- or D-alanine and a propargyl group.

20 35. A compound according to claim 1 comprising a hydroxamate iron-chelating function and a propargyl group.

36. A compound according to claim 35 wherein said hydroxamate is a CONHOH-(CH₂)₂- radical that is linked to the propargyl group via -N- atom(s).

25 37. A compound according to claim 35 or 36 wherein said hydroxamate radical is linked to the propargyl group via a piperazine ring.

38. A compound of the formula I to IV or a pharmaceutically acceptable salt thereof:

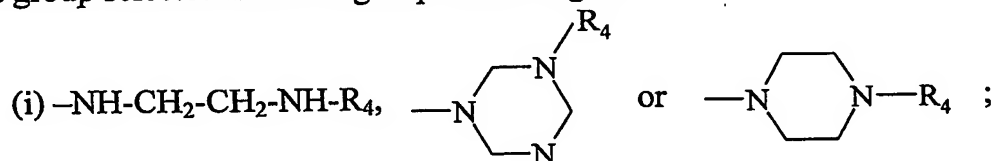


wherein

10 R_1 is a residue of an analog of a neuroprotective peptide containing a cysteine residue that is linked to the C atom via the -S- atom of the L- or D-Cys residue, and wherein the amino terminal of the peptide is optionally substituted by a hydrophobic group such as Fmoc or stearyl;

R_2 is H or -NH-X;

15 R_3 is a group selected from the group consisting of



20 (ii) -CR₅R₆R₇; (iii) -N(CH₃)-X; (iv) -N(R₈)-CH(CH₂SH)COOC₂H₅; (v) -N(R₈)-CH₂-COOCH₂C₆H₅; and (vi) -S-CH₂-CH(COOH)-NHR₈';

R_4 is a group selected from the group consisting of (i) X; (ii) COOC₂H₅;

(iii) (CH₂)₂-O-R₈; and (iv) -COO-(CH₂)₂-NH-R₈;

R_5 is H, C₁-C₄ lower alkyl, preferably CH₃, or COOC₂H₅;

25 R_6 is H, COOH, COO⁻ or COOC₂H₅;

R_7 is selected from the group consisting of (i) -NH-R₈; (ii) -NH₃⁺;

(iii) $-\text{NH}-\text{COCH}_3$, (iv) $-\text{NH}-\text{NH}-\text{R}_8$, and

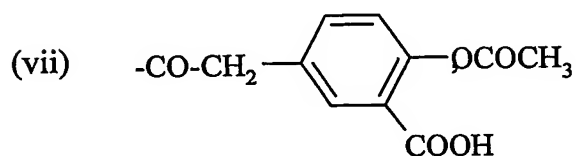
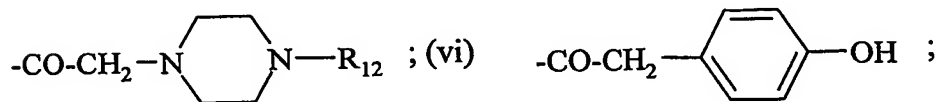
(v) $-\text{NH}-\text{NH}-\text{CO}-\text{CH}(\text{CH}_2\text{OH})-\text{NH}-\text{R}_8$;

R_8 is H or X; R'_8 is H, X or Fmoc;

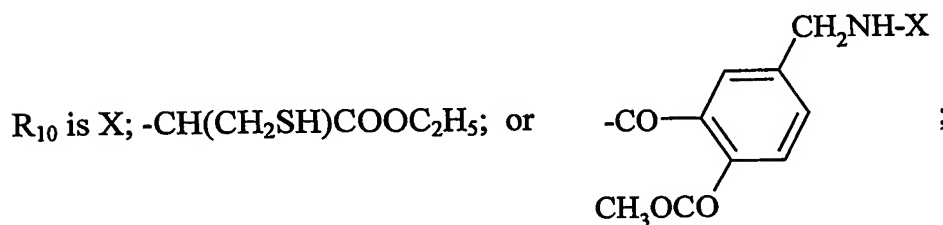
R_9 is selected from the group consisting of (i) H; (ii) $-\text{CO}-\text{CH}_2-\text{R}_1$;

5

(iii) $-\text{CH}_2-\text{COOCH}_2\text{C}_6\text{H}_5$; (iv) $-\text{CH}(\text{CH}_2\text{SH})\text{COOC}_2\text{H}_5$; (v)



10



n is an integer from 1 to 6;

15

R_{11} is a group selected from the group consisting of

(i) $-\text{S}-\text{CH}_2-\text{CH}(\text{COOH})-\text{NH}-\text{X}$;

(ii) $-\text{N}(\text{X})-\text{CH}_2\text{COO}-\text{CH}_2-\text{C}_6\text{H}_5$;

(iii) $-\text{N}(\text{CH}_3)-\text{X}$;

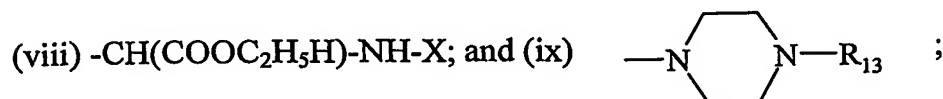
(iv) $-\text{N}(\text{X})-\text{CH}(\text{CH}_2\text{SH})\text{COOC}_2\text{H}_5$;

20

(v) $-\text{CH}_2-\text{NH}-\text{NH}-\text{CO}-\text{CH}(\text{CH}_2\text{OH})-\text{NH}-\text{X}$;

(vi) $-\text{C}(\text{CH}_3)(\text{COOH})-\text{NH}-\text{NH}-\text{X}$;

(vii) $-\text{CH}(\text{COOH})-\text{NH}-\text{X}$;



25

R_{12} is X, C_1 – C_4 lower alkyl, preferably CH_3 , $COOC_2H_5$ or $-(CH_2)_2-OH$;

R_{13} is X, $-(CH_2)_2-OX-$, or $-COO-(CH_2)_2-NH-X$; and

X is a propargyl group,

5 but excluding the compound 5-[4-(2-hydroxyethyl)piperazin-1-ylmethyl]-8-hydroxyquinoline.

39. A compound of the formula I or a pharmaceutically acceptable salt thereof of the formula:



15 wherein

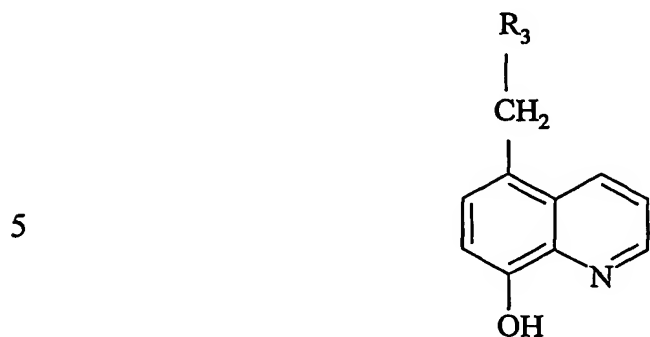
R_1 is a residue of an analog of a neuroprotective peptide or a fragment thereof containing a L- or D-cysteine residue that is linked to the C atom via the -S-atom of the Cys residue, and wherein the amino terminal of the peptide is optionally substituted by a hydrophobic group such as Fmoc or stearyl;

20 R_2 is H or $-NH-X$; and

X is a propargyl group.

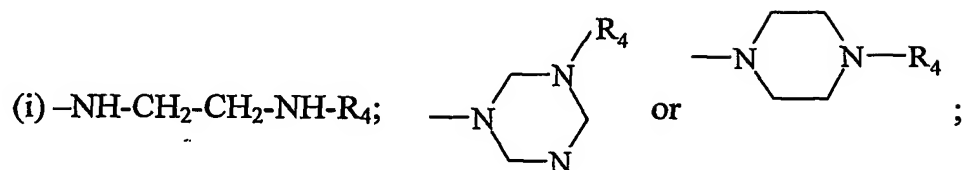
40. A compound of the formula I according to claim 39 wherein R_1 is an analog of a neuroprotective peptide selected from the group consisting of vasoactive
25 intestinal peptide (VIP), gonadotropin-releasing hormone (GnRH), Substance P or enkephalin or a fragment thereof in which one amino acid residue has been replaced by a L- or D-cysteine residue and R_2 is H.

41. A compound according to claim 40 wherein said analog is selected from the group consisting of the VIP fragment analog of SEQ ID NO:2 bearing a stearyl (identified herein as compound M6, Appendix II) or a Fmoc group (M7, Appendix II) at the amino terminal, the residue of a GnRH analog of SEQ ID NO:4 (M8, Appendix II) or SEQ ID NO:5 (M22, Appendix II), the residue of a Substance P analog of SEQ ID NO:7 (M27, Appendix II) or SEQ ID NO:8 (M28, Appendix II), and the residue of an enkephalin analog of SEQ ID NO:11 (M19, Appendix II), SEQ ID NO:12 (M21, Appendix II), SEQ ID NO:13 (M18, Appendix II), and SEQ ID NO:14 (M20, Appendix II).
42. A compound of the formula I according to claim 39 wherein R_1 is an analog of a neuroprotective peptide selected from the group consisting of vasoactive intestinal peptide (VIP), gonadotropin-releasing hormone (GnRH), Substance P or enkephalin or a fragment thereof in which one amino acid residue has been replaced by a L- or D-cysteine residue and R_2 is -NH-propargyl.
43. A compound according to claim 42 wherein said analog is selected from the group consisting of the residue of the VIP fragment analog of SEQ ID NO:2 bearing a stearyl (M6A, Appendix I) or a Fmoc group (M7A, Appendix I) at the amino terminal, the residue of a GnRH analog of SEQ ID NO:4 (M8A) or SEQ ID NO:5 (M22A, Appendix I), the residue of a Substance P analog of SEQ ID NO:7 (M27A, Appendix I) or SEQ ID NO:8 (M28A, Appendix I), and the residue of an enkephalin analog of SEQ ID NO:11 (M19A, Appendix I), SEQ ID NO:12 (M21A, Appendix I), SEQ ID NO:13 (M18A, Appendix I), and SEQ ID NO:14 (M20A, Appendix I).
44. A compound of the formula II or a pharmaceutically acceptable salt thereof of the formula:



wherein

10 R_3 is a group selected from the group consisting of



15 (ii) $-\text{CR}_5\text{R}_6\text{R}_7$; (iii) $-\text{N}(\text{CH}_3)-\text{X}$; (iv) $-\text{N}(\text{R}_8)-\text{CH}(\text{CH}_2\text{SH})\text{COOC}_2\text{H}_5$;
 (v) $-\text{N}(\text{R}_8)-\text{CH}_2-\text{COOCH}_2\text{C}_6\text{H}_5$; and (vi) $-\text{S}-\text{CH}_2-\text{CH}(\text{COOH})-\text{NHR}_8'$;

R_4 is selected from the group consisting of (i) X ; (ii) COOC_2H_5 ;

(iii) $(\text{CH}_2)_2-\text{O}-\text{R}_8$; and (iv) $-\text{COO}-(\text{CH}_2)_2-\text{NH}-\text{R}_8$;

R_5 is H , CH_3 or COOC_2H_5 ;

20 R_6 is H , COOH , COO^- or COOC_2H_5 ;

R_7 is selected from the group consisting of (i) $-\text{NH}-\text{R}_8$; (ii) $-\text{NH}_3^+$;

(iii) $-\text{NH}-\text{COCH}_3$; (iv) $-\text{NH}-\text{NH}-\text{R}_8$;

and (v) $-\text{NH}-\text{NH}-\text{CO}-\text{CH}(\text{CH}_2\text{OH})-\text{NH}-\text{R}_8$;

R_8 is H or X , and R_8' is H , X , or Fmoc ; and

25 X is a propargyl group,

but excluding the compound 5-[4-(2-hydroxyethyl)piperazin-1-ylmethyl]-8-hydroxy-quinoline.

45. A compound of formula II according to claim 44 wherein R_3 is a piperazine ring, but excluding the compound wherein R_4 is $-(\text{CH}_2)_2-\text{OH}$.

46. A compound of formula II according to claim 44 wherein R_3 is a piperazine ring and R_4 is $-\text{COOC}_2\text{H}_5$, as represented by the compound herein designated HLA16 (Appendix IV).

47. A compound of formula II according to claim 44 wherein R_3 is a piperazine ring and R_4 is a propargyl group, as represented by the compound herein designated HLA20 (Appendix III).

48. A compound of formula II according to claim 44 wherein R_3 is a piperazine ring as represented by the compounds herein designated HLA16a and M17 (Appendix III).

49. A compound of formula II according to claim 44 wherein R_3 is $-\text{S}-\text{CH}_2-\text{CH}(\text{COOH})-\text{NHR}_8'$ and R_8' is H, as represented by the compounds herein designated D-HQ-CysOH (M11, Appendix II) and L-HQ-CysOH (M12, Appendix II), or R_8' is propargyl, as represented by the compounds herein designated D-(HQ-Pr)-CysOH (M11a, Appendix III) and L-(HQ-Pr)-CysOH (M12a, Appendix III), or R_8' is Fmoc, as represented by the compounds herein designated M11B and M12B (Appendix IV).

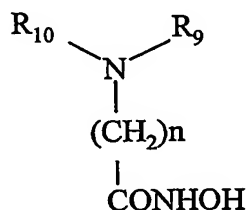
50. A compound of formula II according to claim 44 wherein R_3 is a group $-\text{CR}_5\text{R}_6\text{R}_7$, wherein R_5 is H, R_6 is COOH , R_7 is $-\text{NH}-\text{R}_8$, and R_8 is H, as represented by the compounds herein designated D-HQ-Ala (M9, Appendix IV) and L-HQ-Ala (M10, Appendix IV); or R_8 is propargyl, as represented by the compounds herein designated D-(HQ-Pr)-Ala (M9a, Appendix III) and L-(HQ-Pr)-Ala (M10a, Appendix III); or R_5 is H, R_6 is COO^- and R_7 is $-\text{NH}_3^+$, as represented by the compound herein designated HQ-Ala (HLM8, Appendix IV); or R_5 is H, R_6 is COOC_2H_5 and R_7 is $-\text{NH}_2$, as represented by the compound herein designated HQ-AlaEt (HLM9, Appendix IV); or R_5 and R_6 are both COOC_2H_5 , and R_7 is $-\text{NH}-\text{COCH}_3$, as represented by the compound herein designated HLM7 (Appendix IV);

or R_5 is H, R_6 is COOC_2H_5 and R_7 is $-\text{NH}$ -propargyl, as represented by the compound herein designated M31 (Appendix III).

51. A compound of formula II according to claim 44 wherein R_3 is a group - $\text{NR}_8\text{-CH}(\text{CH}_2\text{SH})\text{COOC}_2\text{H}_5$, wherein R_8 is H, as represented by the compound herein designated M32 (Appendix IV), or R_8 is propargyl, as represented by the compound herein designated M33 (Appendix III).

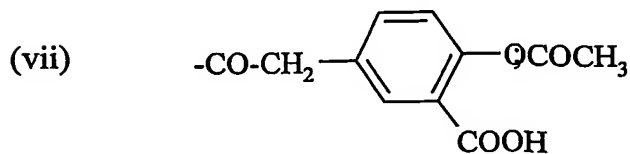
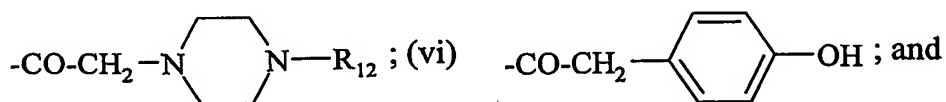
52. A compound of formula II according to claim 44 wherein R_3 is a group - $\text{N}(\text{CH}_3)\text{-propargyl}$, as represented by the compound herein designated M30 (Appendix III).

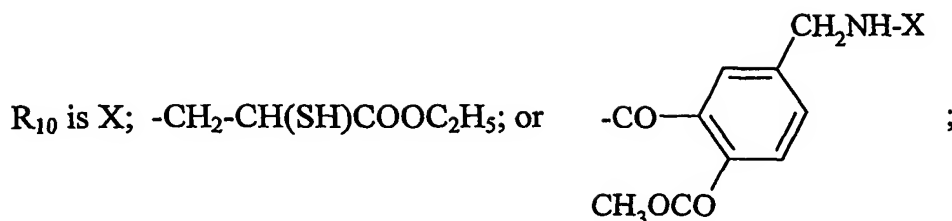
10 53. A compound of formula III or a pharmaceutically acceptable salt thereof of the formula:



wherein

R_9 is selected from the group consisting of (i) H; (ii) $-\text{CO-CH}_2\text{-R}_1$;
(iii) $-\text{CH}_2\text{-COOCH}_2\text{C}_6\text{H}_5$; (iv) $-\text{CH}(\text{CH}_2\text{SH})\text{COOC}_2\text{H}_5$; (v)





n is an integer from 1 to 6, preferably 1 or 2;

- 5 R_{12} is X, $\text{C}_1\text{-C}_4$ lower alkyl, preferably methyl, COOC_2H_5 , or $-(\text{CH}_2)_2\text{-OH}$;
and X is a propargyl group.

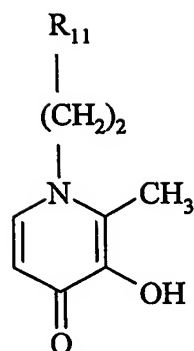
54. A compound of formula III according to claim 53 wherein R_9 is $-\text{CO-CH}_2\text{-}$
 R_1 , wherein R_1 is the residue of an analog of a neuroprotective peptide or a fragment
 10 thereof containing a L- or D-Cys residue.

55. A compound of formula III according to claim 54 wherein said analog is
 selected from the group consisting of the residue of a VIP fragment analog of SEQ
 ID NO:2 bearing a stearyl (M6B, Appendix V) or a Fmoc group (M7B, Appendix
 V) at the amino terminal, the residue of a GnRH analog of SEQ ID NO:4 (M8B,
 15 Appendix V) or SEQ ID NO:5 (M22B, Appendix V), the residue of a Substance P
 analog of SEQ ID NO:7 (M27B, Appendix V) or SEQ ID NO:8 (M28B, Appendix
 V), and the residue of an enkephalin analog of SEQ ID NO:11 (M19B, Appendix
 V), SEQ ID NO:12 (M21B, Appendix V), SEQ ID NO:13 (M18B, Appendix V),
 and SEQ ID NO:14 (M20B, Appendix V).

- 20 56. A compound of formula III according to claim 53 as represented by the
 compounds herein designated M35, M36, M37, M38, M39, M40, M41, M42, M43,
 M44, M45 and M46 (Appendix V).

57. A compound of formula IV or a pharmaceutically acceptable salt thereof
 of the formula:

5



wherein

10 R_{11} is selected from the group consisting of

- (i) $-S-CH_2-CH(COOH)-NH-X$;
- (ii) $-N(X)-CH_2COO-CH_2-C_6H_5$;
- (iii) $-N(CH_3)-X$;
- (iv) $(iv) -N(X)-CH(CH_2SH)COOC_2H_5$;
- 15 (v) $-CH_2-NH-NH-CO-CH(CH_2OH)-NH-X$;
- (vi) $-C(CH_3)(COOH)-NH-NH-X$;
- (vii) $-CH(COOH)-NH-X$;
- (viii) $-CH(COOC_2H_5)-NH-X$; and (ix) $-N \text{ (in a 6-membered ring) } -R_{13}$

20 R_{13} is X , $-(CH_2)_2-OX$, or $-COO-(CH_2)_2-NH-X$; and
 X is a propargyl group.

58. A compound of formula IV according to claim 57 as represented by the
 compounds herein designated M9b, M11b, M12b, M13b, M15b, HLA16b, M17a,
 25 HLA20a, M30a, M31a, M33a, and M34b (Appendix VI).

59. A compound of formula I, II, III or IV according to any one of claims 38 to
 57 as depicted in the Appendices I to VI herein, but excluding the compound
 designated VK-28 in Appendix IV.

60. A pharmaceutical composition comprising a compound according to any one of claims 1 to 59 or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

61. Use of a compound according to any one of claims 1 to 59 for the
5 preparation of a pharmaceutical composition for iron chelation therapy.

62. The use according to claim 61 wherein said iron chelation therapy is for treatment and/or prevention of diseases, disorders and conditions associated with iron overload and oxidative stress.

63. The use according to claim 62 wherein said disease, disorder or condition
10 associated with iron overload and oxidative stress is a neurodegenerative or cerebrovascular disease or disorder, a neoplastic disease, hemochromatosis, thalassemia, a cardiovascular disease, diabetes, a inflammatory disorder, anthracycline cardiotoxicity, a viral infection, a protozoal infection, a yeast infection, retarding ageing, and prevention and/or treatment of skin ageing and skin
15 protection against sunlight and/or UV light.

64. The use according to claim 63 for iron chelation and neuroprotection in the prevention and/or treatment of neurodegenerative and cerebrovascular diseases, conditions and disorders such as Parkinson's disease, Alzheimer's disease, stroke, amyotrophic lateral sclerosis (ALS), multiple sclerosis, Friedreich's ataxia,
20 Hallervorden-Spatz disease, epilepsy and neurotrauma.

65. The use according to claim 64 wherein said neurodegenerative disease is Parkinson's disease or Alzheimer's disease.

66. The use according to claim 64 wherein said cerebrovascular disorder is stroke.

67. The use according to claim 63 for inhibition of cell proliferation in the treatment of neoplastic diseases, optionally in combination with one or more cytotoxic anticancer drugs.

68. The use according to claim 63 for prevention and/or treatment of iron
5 overload in hemochromatosis and thalassemia.

69. The use according to claim 63 for prevention and/or treatment of cardiovascular diseases, particularly to prevent the damage associated with free radical generation in reperfusion injury.

70. The use according to claim 63 for prevention and/or treatment of diabetes.

10 71. The use according to claim 63 for prevention and/or treatment of inflammatory disorders such as a joint inflammatory disorder, particularly rheumatoid arthritis, inflammatory bowel disease (IBD), and psoriasis.

72. The use according to claim 63 for prevention and/or treatment of anthracycline cardiotoxicity.

15 73. The use according to claim 63 for prevention and/or treatment of viral infection such as a retroviral infection, e.g, HIV-1, optionally in combination with antiviral agents.

74. The use according to claim 63 for prevention and/or treatment of protozoal infection such as malaria, or yeast infection such as *Candida albicans* infection.

20 75. The use according to claim 63 for retarding ageing and/or improving the ageing process by prevention of ageing-related diseases, disorders or conditions such as neurodegenerative diseases, disorders or conditions.

76. The use according to claim 63 for prevention and/or treatment of skin ageing and/or skin damage associated with ageing and/or exposure to sunlight and/or UV light.
- 5 77. Use of a compound according to any one of claims 1 to 59 for the preparation of a cosmetic composition for topical application for prevention and/or treatment of skin ageing and/or skin damage associated with ageing and/or exposure to sunlight and/or UV light.
78. Use of a compound according to any one of claims 1 to 59 ex-vivo for preservation of organs intended for transplantation such as heart, lung or kidney.
- 10 79. A method for iron chelation therapy which comprises administering to an individual in need thereof an effective amount of a compound of any one of claims 1 to 59 or a pharmaceutical composition according to claim 60.
80. The method according to claim 79 is for treatment and/or prevention of a disease, disorder or condition associated with iron overload and oxidative stress.
- 15 81. The method according to claim 79 for the prevention and/or treatment of a neurodegenerative disease, condition or disorder.
82. The method according to claim 79 for prevention and/or treatment of cancer, optionally in combination with one or more chemotherapeutic agents.
83. The method according to claim 79 for the prevention and/or treatment of iron
20 overload in hemochromatosis or thalassemia patients,
84. The method according to claim 79 for prevention and/or treatment of a cardiovascular diseases, e.g. to prevent the damage associated with free radical generation in reperfusion injury.

85. The method according to claim 79 for prevention and/or treatment of diabetes.

86. The method according to claim 79 for prevention and/or treatment of an inflammatory disorder.

5 87. The method according to claim 86 wherein the inflammatory disorder is a joint inflammatory disorder, particularly rheumatoid arthritis, inflammatory bowel disease (IBD) or psoriasis.

88. The method according to claim 79 for prevention and/or treatment of anthracycline cardiotoxicity in an individual undergoing treatment with
10 anthracycline neoplastic drugs.

89. The method according to claim 79 for prevention and/or treatment of a viral, protozoal or yeast infection.

90. The method according to claim 89 wherein said viral infection is a retroviral infection, e.g, HIV-1, and the compound is administered to an AIDS patient,
15 optionally in combination with antiviral agents.

91. The method according to claim 89 wherein said protozoal infection is malaria caused by Plasmodium falciparum, and said yeast infection is a Candida albicans infection.

92. The method according to claim 79 for retarding ageing and/or improving the
20 ageing process in a healthy individual or an individual suffering from an age-related disease such as a neurodegenerative disease, disorder or condition.

93. The method according to claim 79 for prevention and/or treatment of skin ageing and/or skin damage associated with ageing.

94. The method according to claim 79 for prevention and/or treatment of skin damage associated with exposure to sunlight and/or UV light.

95. Use of the compound 5-[4-(2-hydroxyethyl)piperazin-1-ylmethyl]-8-hydroxyquinoline (herein identified as VK-28, Appendix IV) for the preparation of
5 a pharmaceutical composition for treatment and/or prevention of a disease, disorder or condition associated with iron overload and oxidative stress selected from a neoplastic disease, hemochromatosis, thalassemia, a cardiovascular disease, diabetes, a inflammatory disorder, anthracycline cardiotoxicity, a viral infection, a protozoal infection, a yeast infection, retarding ageing, and prevention and/or
10 treatment of skin ageing and skin protection against sunlight and/or UV light.

96. A method for iron chelation therapy which comprises administering to an individual in need thereof an effective amount the compound 5-[4-(2-hydroxyethyl)piperazin-1-ylmethyl]-8-hydroxyquinoline (herein identified as VK-28, Appendix IV) for treatment and/or prevention of a disease, disorder or condition
15 associated with iron overload and oxidative stress, excluding the prevention and/or treatment of a neurodegenerative disease, condition or disorder.

97. Use of the compound 5-[4-(2-hydroxyethyl)piperazin-1-ylmethyl]-8-hydroxyquinoline (herein identified as VK-28, Appendix IV) for the preparation of a cosmetic composition for topical application for prevention and/or treatment of
20 skin ageing and/or skin damage associated with ageing and/or exposure to sunlight and/or UV light.

98. Use of the compound 5-[4-(2-hydroxyethyl)piperazin-1-ylmethyl]-8-hydroxyquinoline (herein identified as VK-28, Appendix IV) ex-vivo for preservation of organs intended for transplantation such as heart, lung or kidney.